

What is claimed is:

- 1 1. A regulated torque limiting clutch, comprising:
2 a drive flange; an end plate in fixed spaced relation to said drive flange;
3 interleaved friction and separator disks interposed between said drive
4 flange and said end plate;
5 a pressure plate;
6 a spring assembly urging said pressure plate against said interleaved
7 friction and separator disks and urging said friction and separator disks into
8 forceful engagement with each other, establishing a characteristic torque for the
9 torque limiting clutch;
10 a torque regulating plate secured to said pressure plate, said torque
11 regulating plate and said end plate defining a cavity therebetween; and
12 a liquid within said cavity, rotation of said end plate imparting centrifugal
13 force to said liquid and forcing said liquid radially and axially outwardly in said
14 cavity, said liquid axially urging said torque regulating plate and said pressure
15 plate, changing said characteristic torque.
- 1 2. The regulated torque limiting clutch according to claim 1, wherein said
2 cavity has an axially outer wall and an axially inner wall, one of said outer and
3 inner walls comprising a portion of said end plate, and the other of said outer and
4 inner walls comprising a portion of said torque regulating plate.
- 1 3. The regulated torque limiting clutch according to claim 2, wherein said
2 axially outer wall comprises a portion of said torque regulating plate, said
3 centrifugal force causing said liquid to urge said pressure plate away from said
4 interleaved friction and separator disks, reducing said characteristic torque.

1 4. The regulated torque limiting clutch according to claim 2, wherein said
2 axially inner wall comprises a portion of said torque regulating plate, said
3 centrifugal force causing said liquid to urge said pressure plate toward said
4 interleaved friction and separator disks, increasing said characteristic torque.

1 5. The regulated torque limiting clutch according to claim 1, further
2 comprising a bladder within said cavity, said bladder retaining said liquid.
3

4 6. The regulated torque limiting clutch according to claim 5, wherein said
5 liquid has a specific gravity greater than that of water.

1 7. The regulated torque limiting clutch according to claim 5, further
2 comprising a drive flange for interconnection with an input power source, and an
3 output hub for interconnection with a driven unit.

1 8. The regulated torque limiting clutch according to claim 7, further
2 comprising a friction disk fixedly secured to said output hub.

1 9. The regulated torque limiting clutch according to claim 8, further
2 comprising a bearing and a seal interposed between said output hub and said
3 torque regulating plate.

1 10. The regulated torque limiting clutch according to claim 7, wherein said
2 spring assembly comprises a cup having a spring urging against one end thereof,
3 and a flange at an opposite end thereof engaging said pressure plate.

1 11. The regulated torque limiting clutch according to claim 10, further
2 comprising torque pins interconnecting said drive flange and said end plate, said
3 torque pins being received by said separator disks.

1 12. The regulated torque limiting clutch according to claim 11, wherein said
2 bladder comprises a plurality of circumferentially spaced baffles extending
3 therewithin.

1 13. A regulated torque limiting clutch, comprising:
2 a drive flange;
3 a pressure plate;
4 interleaved friction and separator disks interposed between said drive
5 flange and pressure plate;
6 a spring assembly having a spring force urging said pressure plate against
7 said interleaved friction and separator disks and into forceful engagement with
8 each other;
9 a torque regulating plate secured to said pressure plate and axially
10 movable therewith; and
11 a centrifugally actuated mechanism in communication with said torque
12 regulating plate for modifying said spring force as a function of rotational speed
13 of the torque limiting clutch.

1 14. The regulated torque limiting clutch according to claim 13, wherein said
2 centrifugally actuated mechanism is taken from the group of liquid, powder,
3 particulate matter, and mechanical assemblies of levers, weights, and linkages.

1 15. The regulated limiting clutch according to claim 13, wherein said
2 centrifugally actuated mechanism comprises a liquid within a cavity.

1 16. The regulated torque limiting clutch according to claim 15, wherein said
2 cavity has a pair of axially separated walls, a first stationary wall and a second
3 axially movable wall.

1 17. The regulated torque limiting clutch according to claim 16, wherein said
2 liquid is maintained within a bladder within said cavity.

1 18. The regulated torque limiting clutch according to claim 17, further
2 comprising an end plate comprising said first stationary wall, and wherein said
3 second axially moveable wall is established by said torque regulating plate.

1 19. The regulated torque limiting clutch according to claim 18, wherein said
2 stationary wall is proximate said pressure plate and said movable wall is distal
3 said pressure plate.

1 20. The regulated torque limiting clutch according to claim 18, wherein said
2 movable wall is proximate said pressure plate and said stationary wall is distal
3 said pressure plate.